BHS

The opinion in support of the decision being entered today is not binding precedent of the Board.

Paper 53

Filed by: Trial Section Motions Panel
Box Interference
Washington, D.C. 20231
Tel: 703-308-9797
Fax: 703-305-0942

Filed: May 14, 2002

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

GAN **ZHOU**, YOUNG QIAO,
and FAI MOK
Junior Party
(U.S. Patent No. 5,796,858)

v.

JOHN MARTIN **KEAGY**, NAUM PINKHASIK
and ALEXANDER MUZIL
Senior Party
(U.S. Application 09/255,744)

Patent Interference No. 104,649

Before: LEE, MEDLEY and TIERNEY, Administrative Patent Judges.
TIERNEY, Administrative Patent Judge.

FINAL DECISION
(Decision on Preliminary Motions and Priority)

This interference is before a motions panel for a decision on preliminary motions. Oral argument took place on February 13, 2002. Representing Junior Party Zhou at oral argument was Bradley J. Bereznak. Senior Party Keagy was represented by William Booth.

TABLE OF CONTENTS

I. Summary of the Decision

This interference is directed to a fingerprint sensing system. Generally, the parties claim a fingerprint sensing system having a sheet prism. The sheet prism has a sensing surface opposite which is a surface having a plurality of rigid prismlets. When a finger is positioned on the sensing surface, light is passed through the prismlets and is reflected at the sensing surface through total internal reflection and is emitted from the exit surfaces of the prismlets to create an image of the fingerprint.

The parties have raised several issues during this preliminary motions phase. Primarily, Zhou has requested that Keagy's corresponding claims be held unpatentable over the prior art and for lack of definiteness and written description. Additionally, Zhou has attacked Keagy's accorded benefit date. Zhou has also requested that certain Zhou claims be designated as not corresponding to Count 1, the sole count in the interference. Keagy has filed a single motion seeking to designate certain Zhou claims as corresponding to interference.

As discussed in detail below, we hold Keagy's claims to be patentable over the prior art cited by Zhou. Moreover, on the facts presented, we find that Keagy's claims are definite and meet the written description requirement of 35 U.S.C. § 112, 1st paragraph. Zhou, however, has demonstrated that Zhou claims 14-17 and 28 represent a "separate" patentable invention and thus should be designated as not corresponding to Count 1. In contrast, Keagy has failed to demonstrate that Zhou claims 11-13 are the "same" patentable invention and thus these claims have not been designated as corresponding to Count 1.

Zhou has failed in its attack on Keagy's accorded benefit date. As Zhou has failed to allege a date of conception prior to Keagy's accorded priority benefit date, judgment on priority is awarded against Junior Party Zhou.

II. Findings of Fact

1. Real Parties in Interest

a. Junior Party

F1. Digital Persona Inc. is said to be the real party in interest in the involved Zhou '858 patent. (Zhou Real Party in Interest, Paper No. 7).

b. Senior Party

F2. Keagy's involved '744 application is said to be assigned to Identix Incorporated. (Notice of Real Party in Interest, Paper No. 11).

2. Accorded Priority Benefit

a. Junior Party

F3. Zhou's involved '858 patent issued on August 18, 1998 from U.S. Application No. 08/646,531, filed May 10, 1996. (Notice Declaring Interference, Paper No. 1, p. 3).

b. Senior Party

F4. Keagy's involved '744 application was filed February 23, 1999. Solely for the purposes of priority, Keagy '744 has been accorded the benefit of the filing dates of:

i. U.S. Application No. 09/046,418 ("'418"), filed March 23, 1998, now U.S. Patent No. 6,069,969;

ii. U.S. Application No. 08/308,098 ("'098"), filed September 16, 1994, now U.S. Patent No. 5,732,148.

Keagy '744 claims to be a continuation of the '418 application, and the '418 application is said to be a continuation of the '098 application. (Notice Declaring Interference, Paper No. 1, p. 4 and Keagy '744 specification, p. 1, lines 5-7).

3. The Count and Claim Correspondence

F5. Count 1, the sole count in the interference, is claim 1 of Zhou's U.S. Patent No. 5,796,858. The claims of the parties are as follows:

Zhou: 1-28
Keagy: 1-8, 13, 21 and 22

The claims of the parties which correspond to Count 1 are:

Zhou: 1-10 and 14-28
Keagy: 1-8, 13, 21 and 22

The claims of the parties which do not correspond to Count 1

Zhou: 11-13
Keagy: None

(Notice Declaring Interference, Paper No. 1, p. 5).

4. Person of Ordinary Skill in the Art

F6. The interfering subject matter relates to the field of optical sensing systems, specifically,

to systems designed to create the image of a fingerprint. A person of ordinary skill in this field would have a Bachelor of Science degree in electrical, optical or computer engineering or a closely related discipline, and at least 1-2 years of experience in the field. (Zhou's First Declaration of Prof. Mark A. Neifeld, ZX 2010, p. 2).

F7. A person of ordinary skill in the art would understand the term "reflected through total internal reflection" to refer to the bouncing back of light from a surface of an optical medium. In contrast, one skilled in the art would understand the term "refraction" to refer to the turning or bending of any wave, such as a light or sound wave, when it passes from one medium into another of a different density. (ZX 2010, pages 14-15, ¶¶ 40-42).

5. Zhou et al., U.S. Patent No. 5,796,858

A. Zhou's Claims 1, 10, 11 and 14

F8. Zhou's claim 1 is also Count 1 and reads as follows:

> 1. A fingerprint sensing system comprising:
> a sheet prism having
> a sensing surface,
> a plurality of rigid prismlets positioned opposite to the sensing surface,
> each prismlet having an entrance surface and an exit surface,
> each prismlet being adjacent to another prismlet,
> the width of the sheet being more than ten times the maximum thickness of any one of the prismlets;
> such that when a finger is positioned on the sensing surface, a portion of illumination radiation illuminating the system, entering a plurality of the entrance surfaces and incident at the sensing surface is reflected through total internal reflection and emitted from a plurality of the exit surfaces to create an image of the fingerprint.

(Zhou '858, claim 1).

F9. Zhou claim 10 reads as follows:

> 10. A fingerprint sensing system as recited in claim 1 further comprising:
> a detector array; and
> a lens to focus the radiation emitted from a number of exit surfaces to the detector array to form the image.

(Zhou '858, claim 10).

F10. Zhou claim 11 reads as follows:

> 11. A fingerprint sensing system as recited in claim 1 further comprising a second sheet prism stacked substantially in parallel with the sheet prism as recited in claim 1, the second sheet prism having a flat surface and a plurality of prismlets positioned opposite to the flat surface, the flat surface of the second sheet prism facing the prismlets of the sheet prism recited in claim 1.

(Zhou '858, claim 11).

F11. Zhou claim 14 reads as follows:

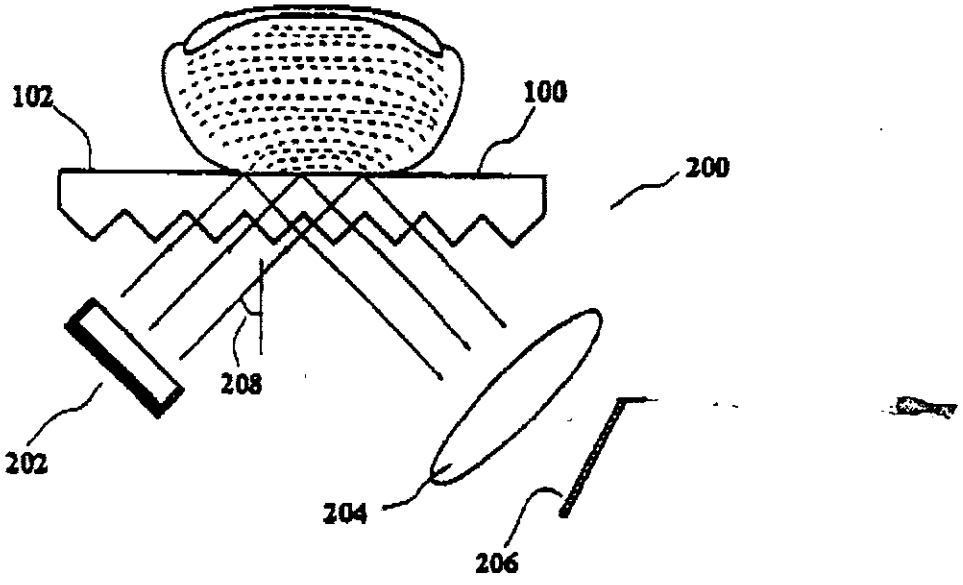
> 14. A fingerprint sensing system as recited in claim 1 wherein:
> the sensing system extends across a maximum length, a maximum width and a maximum height; and
> the system further comprises:
> a detector array, at least whose width is smaller than the width of the sheet prism;
> a lens to focus the radiation emitted from the exit surfaces to the detector array, and to de-magnify the image to be captured by the detector array; and
> an optical system with mirrors to fold the emitted radiation so as to change the ratio between the maximum length and maximum width of the sensing system.

(Zhou '858, claim 14).

B. Zhou's Specification

F12. Zhou's '858 patent specification is directed to a fingerprint sensing system. (Zhou '858, col. 1, lines 5-6 and lines 44-45). Generally, Zhou's fingerprint sensing system employs a sheet prism with numerous prismlets or very small prisms. The sheet prism is said to be very flat, with the width of the sheet being more than ten times the maximum thickness of any one of the prismlets. In contrast to prior art single prism systems, the overall thickness of the sheet prism fingerprint sensing system is significantly reduced. (Zhou '858, col. 1, lines 44-54). By employing such a design, Zhou alleges that its fingerprint sensing system is smaller and cheaper than other commercially available systems. (Zhou '858, col. 8, lines 20-22).

F13. Zhou Figure 3 depicts an embodiment of the sheet prism invention and is reproduced below:



(Zhou '858, Fig. 3).

F14. Zhou describes Figure 3 as follows:

> A finger is placed on the sensing surface **102**, which is parallel to the X-axis. An extended light source **202** provides the illumination radiation for the sheet prism **100**. The illumination angle **208**, which is the angle between the illumination radiation and the Y-axis, is such that the radiation reaching the sensing surface **102** has an incident angle larger than the critical angle of the material of the sheet prism **100** and less than 90 degrees. This ensures the incident radiation is being total internally reflected at the sensing surface **102** at locations without the finger ridges. Thus, a portion of the illumination radiation entering a number of the entrance surfaces and incident at the sensing surface **102** is reflected through total internal reflection. The reflected radiation emits from a number of the exit surfaces to create the fingerprint image. Note that the sheet prism attenuates the radiation, but the loss is lower than the bulky single prism because the sheet prism is much thinner.

(Zhou '858, col. 3, lines 51-67). According to Zhou, the emitted radiation is focused by a lens **204** onto a detector array **206**. (Zhou '858, col. 4, lines 12-13).[1]

6. Keagy et al., U.S. Application 09/255,744

A. Keagy Claim 1

F15. Keagy's claim 1 is identical to Zhou claim 1, which is also Count 1. Keagy claim 1 is an originally filed claim for the '744 application.

---

[1]In Figure 3, the number "**200**" is said to represent a first embodiment of Zhou's invention. (Zhou '858, col. 3, lines 49-50).

B. Keagy's '744 Specification

F16. Keagy's '744 application is directed to an apparatus and method for acquiring a high-resolution image of a person's fingerprint. (Keagy '969, col. 1, lines 11-12).[2] More particularly, Keagy's application is directed to a fingerprint imaging device that employs a finger platen that can be integrated into a card. To create a fingerprint image, a person would insert the card with the finger platen into the fingerprint imaging device to complete the system. The person would then place his or her finger on the top surface of the platen and a camera would take a picture of the fingerprint. (Keagy '969, col. 4, lines 11-24).

F17. Keagy's platen can be of various configurations. A configuration that is said to work especially well is one having a series of "microprisms" in the form of parallel lines of tiny triangular shaped ridges. The small "microprisms" are said to allow for the formation of thin and portable platens as opposed to prior art single prism systems. (Keagy '969, col. 4, lines 25-38).

F18. Keagy '774 claim 1 requires that light enter a plurality of the entrance surfaces and incident at the sensing surface and that the light is then "reflected through total internal reflection." Keagy Figure 5, depicted below, provides a ray diagram that helps explains the concept of total internal reflection.

---

[2]Keagy's '744 application is a continuation of Keagy's U.S. Application No. 09/046,418, now U.S. Patent No. 6,069,969 ("'969"). Keagy '744 and Keagy '969 are said to have identical disclosures. (Zhou Preliminary Motion 3, Paper No. 26, p. 2, fact 2). For reasons of convenience, we cite to Keagy's issued '969 patent rather than Keagy's unpublished '744 application.

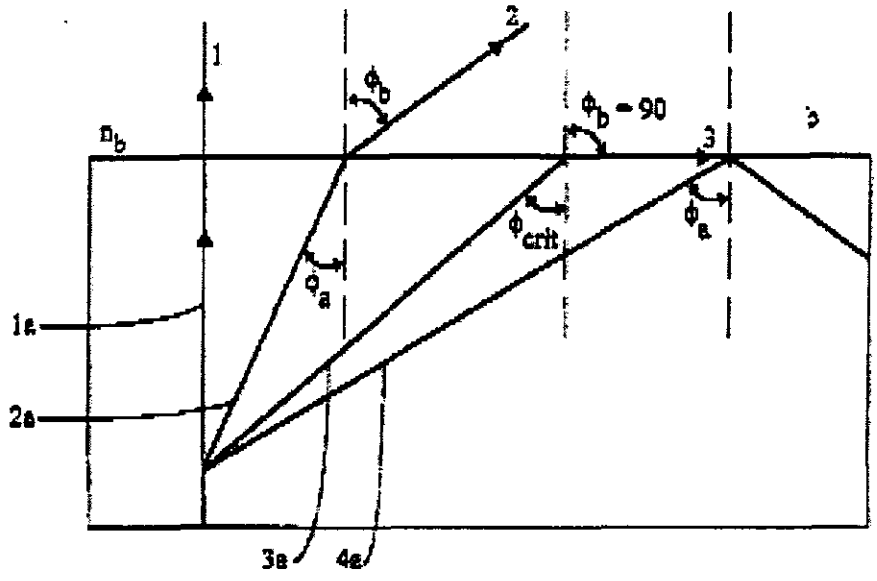


FIG. 5

As shown by Figure 5, rays **3a** and **4a** are totally internally reflected because their incident angles relative to normal N to the interface equal or exceed the critical angle. In contrast, rays **1a** and **2a** pass out of medium a and into medium b because the angle of incidence at the interface between medium a and medium b is less than the critical angle. (Keagy '969, col. 7, lines 36-42).

F19. Keagy Figure 3 is said to depict an "optical ray diagram showing how the working image is formed." (Keagy '969, col. 4, lines 66-67). Keagy Figure 3 is provided below:

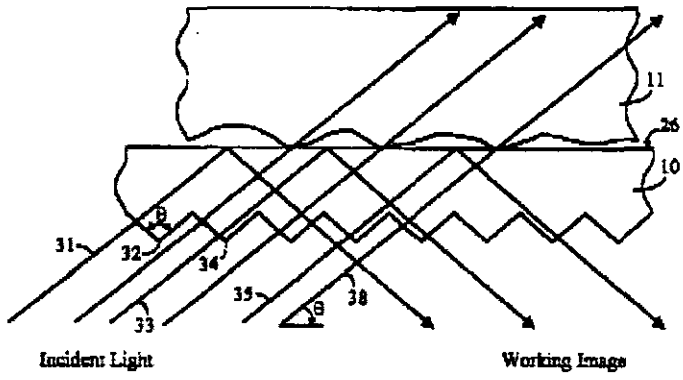


FIG. 3

In Figure 3 above, incident light passes through finger platen **10** having a sheet prism underside and an interface surface **26**, which is contacted by a finger **11**, whereupon the incident light is directed back through the sheet prism to form a working image. According to Keagy:

> In FIG. 3, because of the difference in the indices of refraction between air and flesh, rays that impinge on air in the valleys between fingerprint ridges, such as rays **31**, **33** and **35**, are totally internally refracted and proceed back down through the optical surface to form the rays of the working image. The remaining rays which impinge upon the flesh of a fingerprint ridge, pass out of the plastic of the platen **10**, enter the flesh and escape thereby forming a contrast in the working image between the ridges and surrounding valleys of the fingerprint.

(Keagy '969, col. 7, lines 43-52, underline added).

F20. Keagy Figure 7A is said to depict a ray diagram explaining the formation of a working image with a preferred optical surface. Keagy Figure 7A is provided below:

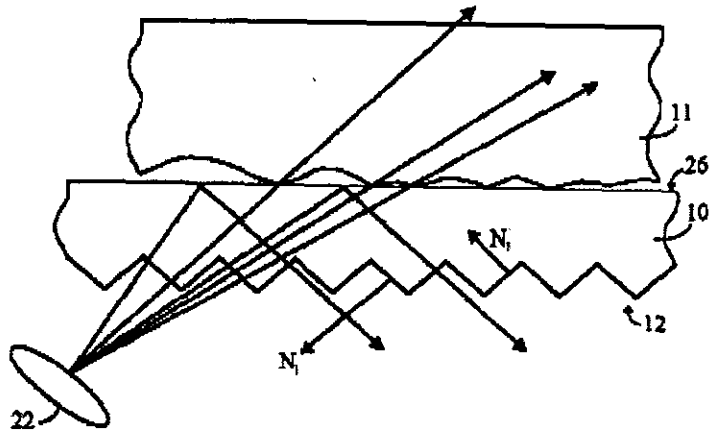


FIG. 7A

Keagy describes the rays passing through the sheet prism surface **12** as follows:

> After passing through the optical surface **12** from the bottom, the rays that impinge on points of the surface **26** in contact with air in valleys surrounding fingerprint ridges <u>are totally internally reflected</u> while rays that impinge on points of the surface **26** in contact with ridges of the fingerprint will not be reflected and will escape from the plastic of the finger platen **10** and be dissipated.

(Keagy '969, col. 8, lines 35-41, underline emphasis added). Thus, while Keagy Figure 3 and Figure 7A both depict rays that bounce off the upper surface of the platen such that the rays are directed towards the bottom of the platen, Keagy states that these rays were "refracted" in Figure 3 and "reflected" in Figure 7A.

F21. Keagy Figure 6 is said to provide a depiction of a ray diagram for a system that does not employ a sheet prism. Keagy Figure 6 is provided below:

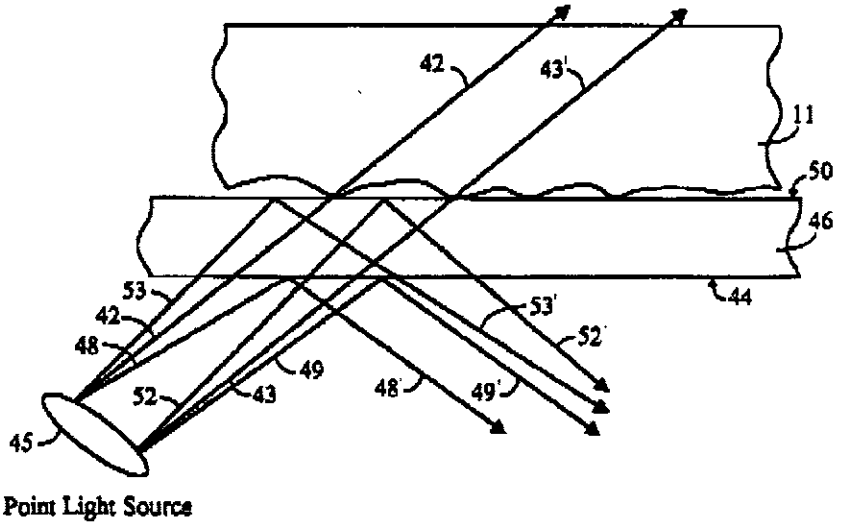


FIG. 6

Keagy '969 provides the following description of the ray diagram of Figure 6:

> In FIG. 6, rays **42** and **43** emanate from a point light source **45** at angles such that they pass through the bottom surface **44** of the plastic platen **46** and reach the upper interface surface **50**. These rays **42** and **43** happen to fall upon points on upper surface **50** in contact with ridges of a finger, and escape the platen and are lost as rays **42'** and **43'**. In contrast, rays **52** and **53** reach the top surface and impinge upon air in the valleys between fingerprint ridges, and are totally internally reflected. Their reflected versions, **53'** and **52'**, form part of the white portions of a working image of the user's fingerprint. Rays **52'** and **53'** are refracted toward the imaging apparatus (not shown) because of the difference in indices of refraction between the flesh in a fingerprint ridge and air.

(Keagy '969, col. 7, line 57 to col. 8, line 3). Keagy's description of Figure 6 is confusing in that it appears to use the terms reflected and refracted to describe the same phenomenon.

F22. Keagy's description of rays that bounce off the upper surface of the platen in Figures 3 (**31**, **33** and **35**) and 6 (**52'** and **53'**) is inconsistent with the description of similar rays in Figures 5 (**3a** and **4a**) and 7A and 7B. Although inconsistent in the specification, one skilled in the art

knowing the difference between "refraction" and "reflection" would readily understand that the use of the "refraction" terminology to describe the reflected rays in Figures 3 and 6 was in error. Specifically, one skilled in the art would appreciate that rays **31**, **33** and **35** in Figure 3 and rays **52'** and **53'** in Figure 6 are totally internally reflected.

7. Asserted "Prior" Art

A. Chen et al., U.S. Patent No. 5,448,649

F23. Chen '649 is directed to an apparatus for imaging a fingerprint. (ZX 2008, col. 1, lines 8-9). More specifically, Chen states in the "Background of the Invention" that the invention:

> [U]tilizes a layer of elastic microprisms as a sensing element for reproduction of a distortionless ridge valley pattern and convert the pattern data into a digital form for further storage or analysis.

(ZX 2008, col. 1, lines 10-13).

F24. Chen Figure 7A is said to represent an embodiment of Chen's invention. Figure 7A of Chen is reproduced below:

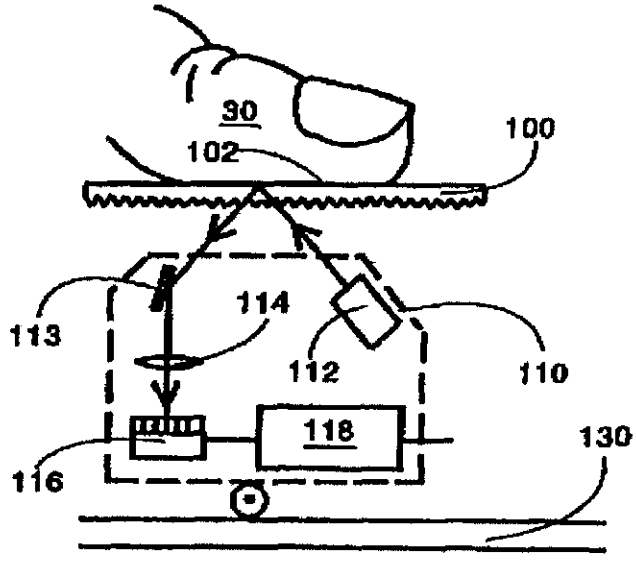


FIG.7A

Chen teaches that Figure 7A is preferably used in cases where a large scanning area is required. The platen used in Figure 7A is described as basically the same as that used in the first two embodiments of Chen's invention using the microprism configuration shown in Chen Figure 4. (ZX 2008, col. 4, lines 29-33).

F25. Chen describes the microprism platen, as shown in Figures 3 and 4, as being made of transparent material and preferably having a "good elasticity" such that the shape deformation disappears once the pressure applied is removed. (ZX 2008, col. 3, lines 51-59).

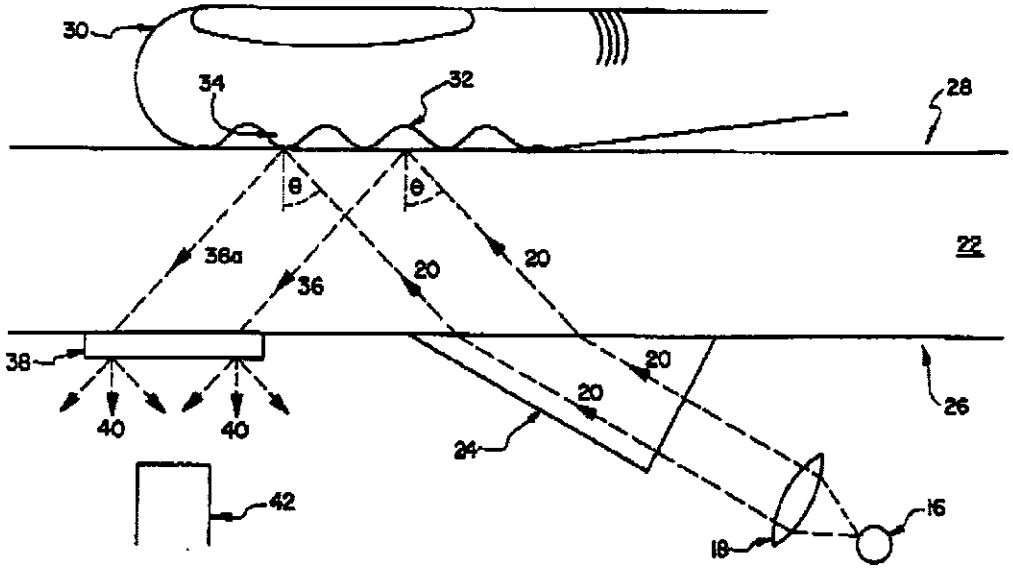
F26. Chen Figure 7B is said to show how the embodiment of Chen Figure 7A works. Generally, Chen states that a light ray is passed through the platen whereupon it is subjected to "total internal light reflection" in the spaces between the ridges that form a fingerprint. In contrast, where the light ray contacts the sweat on a finger ridge, the light ray is "refracted" and no light returns to form an image. (ZX 2008, col. 4, lines 42-53).

B. Sibbald, U.S. Patent No. 5,619,586

F27. Sibbald 's describes an apparatus and techniques for the characterization of fingerprints. (ZX 2012, col. 1, lines 12-13). Specifically, it is an object of Sibbald's invention to provide a method of producing an image of a fingerprint that may be viewed without the aid of optical equipment. (ZX 2012, col. 2, lines 1-8).

F28. Sibbald does not describe using reflected light from a plurality of exit surfaces, e.g., prisms, to create an image of the fingerprint. Instead, Sibbald depicts and describes a fingerprint apparatus employing a direct imaging producing means, such as a ground glass plate or a very thin layer of non-opaque paint. (ZX 2012, Figures 2, 3 and 5, abstract and col. 2, lines 44-47).

F29. Sibbald Figure 3 depicts an embodiment of Sibbald's invention and is depicted below:



(ZX 2012, col. 3, lines 1-2). According to Sibbald, Figure 3 contains similar components as that of Figure 2. (ZX 2012, col. 3, lines 65-67). As with Figure 2, Figure 3 comprises a light source **16** and a collimating lens arranged to produce a collimated light beam **20**. (ZX 2012, col. 3, lines 37-39). Figure 3, however, introduces the collimated light **20** into a light transmitting member by way of a prism strip **44**. (ZX 2012, col. 5, lines 1-5). As discussed with respect to Figure 2, when the light **20** strikes the surface **28** where there is a recess **32** of the fingerprint, the light is totally internally reflected, as shown by light ray **36**. In contrast, when light **20** strikes surface **28** where there is contact with a fingerprint ridge **34**, the light will be largely absorbed, scattered and diffusively reflected, as shown by light ray **36a**. (ZX 2012, col. 3, line 62 to col. 4, line 3). Also,

in contrast to Figure 2, the direct image producing means is a ground glass plate **46** or a thin layer of non-opaque paint applied to surface **26**. (ZX 2012, col. 5, lines 6-12).

C. Cobb, Jr., U.S. Patent No. 4,906,070

F30. Cobb '070 describes a thin film that is said to totally internally reflect light. (ZX 2013, abstract). Generally, the thin film has a structured surface on one side and a smooth surface opposite the structured surface. The structured surface consists of a linear array of miniature prisms. (ZX 2013, col. 1, lines 56-62). Cobb specifically describes a film having about 70 prisms per inch as having suitable flexibility such that the film can be curled into a cylinder while maintaining a smooth continuous accurate surface without breaking. (ZX 2013, col. 3, lines 60-68). The film can be used in a variety of applications, such as a collector of solar energy or as a light conduit. (ZX 2013, abstract).

D. Usui, et al., U.S. Patent No. 5,210,797

F31. Usui describes a method and apparatus for fingerprint recognition. The fingerprint recognition system employs a lens that focuses light onto a CCD camera, which serves as a light receptor means. (ZX 2005, col. 4, lines 29-39).

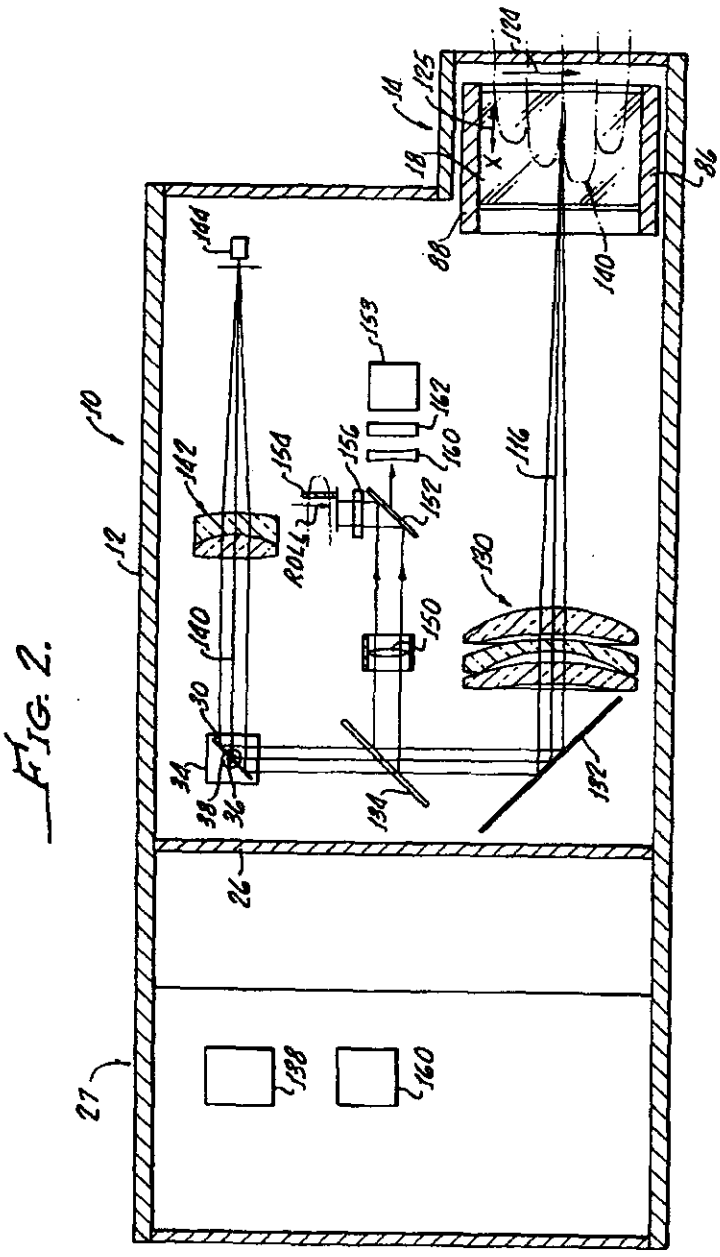
E. Elmes, U.S. Patent No. 4,455,083

F32. Elmes teaches a method and apparatus for verifying the fingerprint of the bearer of a card. Generally, Elmes method involves comparing a fingerprint of the bearer of a card with the fingerprint of the person to whom the card was issued. (ZX 2006, abstract).

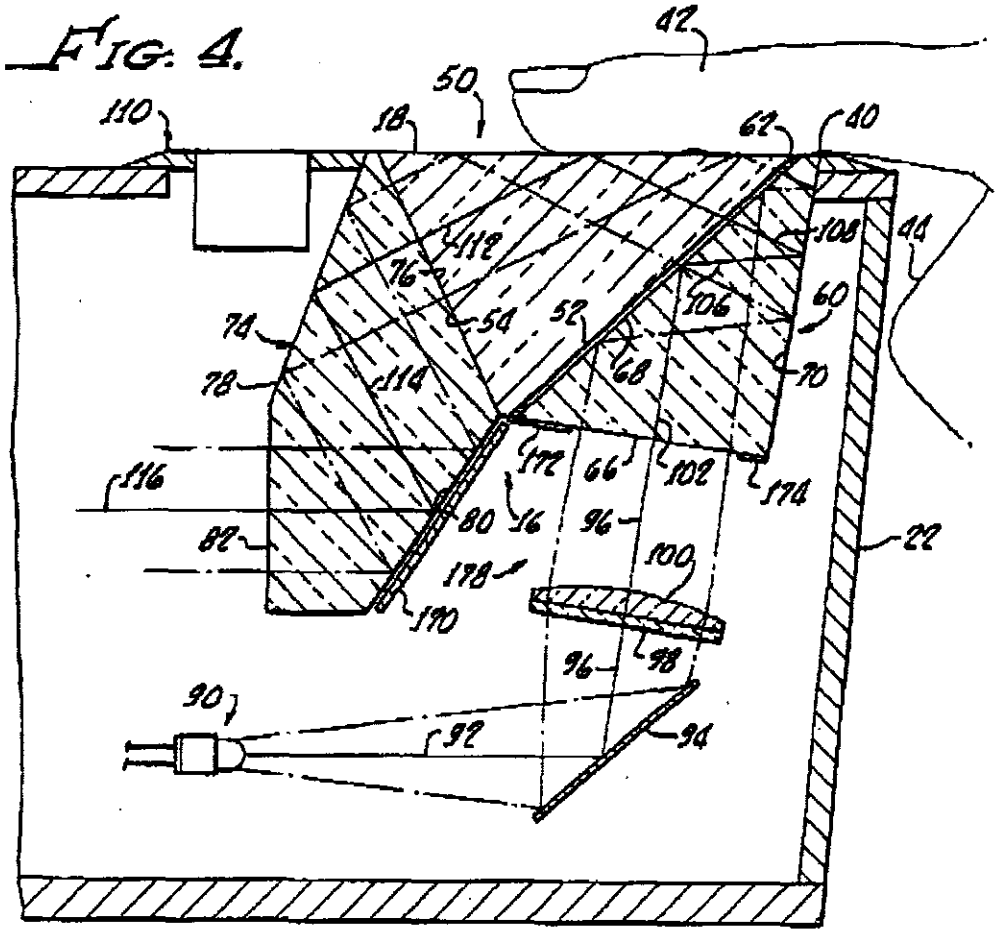
F. Ranalli, U.S. Patent No. 5,625,448

F33. Ranalli is directed to an apparatus for the reading of fingerprints involving a input prism assembly and a precisely controlled scanning mirror. (ZX 2014, col. 1, lines 12-15). Figure 2 of Ranalli is a plan view of the relative orientation and position of optical components in the system housing of Fig. 1. Figure 4 is a side elevation view of the optical prism assembly and its input illumination. (ZX 2014, col. 3, lines 13-20.).

F34. Ranalli Figure 2 is provided below:



F35. Ranalli Figure 4 is provided below:



F36. Generally, in the apparatus of Ranalli, light from an illumination source **90** is directed up towards a platen face **18**. The light from the illumination source is totally internally reflected from the platen face in the spaces between a person's fingerprint ridges. Where the skin contacts the platen, the light is not totally internally reflected. (ZX 2014, col. 5, lines 47-53). The totally

internally reflected light is then reflected through a prism arrangement to optical path leg **116** on the left side of Figure 4 and the bottom of Figure 2. As shown by Figure 2, the light in optical path **116** proceeds through lens **130** and is turned 90° by a turning mirror **132** and is split at beam splitter **134**. (Keagy Opposition 4, Paper No. 37, p. 2, ¶ 9). The light at beam splitter 134 is split into two rays, one of which passes through the splitter and one of which is turned 90°. (See ZX 2014, Fig. 2).

F37. The light passing through splitter **134** is turned 90° again by scanning mirror **30** and proceeds through lens **142** to print camera **144**. The print camera **144** is a one-dimensional linear array charge coupled device (CCD) with sensor aligned perpendicular to the direction of the scan produced by the rotation of scan mirror **30**. (ZX 2014, col. 7, lines 46-54).

F38. The light that is turned 90° at beam splitter **134** passes through lens **150** and then through a beam splitter **152**, with one of the split rays passing through lenses **160** and **162** to a two-dimensional CCD camera **153**. (Keagy Opposition 4, Paper No. 37, p. 2, ¶ 11 and ZX 2014, Fig. 2).

G. 3M™ Brightness Enhancement Film (BEF) II

F39. 3M™ Brightness Enhancement Film (BEF) II is essentially a film having a smooth surface opposite a surface having microprisms. According to 3M, ~~the~~ microprism film is a

transparent optical film that brightens up LCD displays. (KX 1003). By employing the microprisms, the film is said to channel light within a viewing cone for optimum on-axis brightness.

III. Opinion

A. Overview of Preliminary Motions

The parties have presented a total of five preliminary motions for our consideration. Specifically, Keagy has filed a preliminary motion requesting that the interference be redefined by designating Zhou claims 11-13 as corresponding to Count 1. (Keagy Preliminary Motion 1, Paper No. 30, p. 1). In contrast, Zhou has filed four preliminary motions. Zhou has requested that we hold Keagy's corresponding claims unpatentable over prior art (Zhou Preliminary Motion 1, Paper No. 24) and unpatentable for lack of written description and indefiniteness (Zhou Preliminary Motion 2, Paper No. 25). Additionally, Zhou has requested that Keagy be denied benefit of its earlier filed U.S. application (Zhou Preliminary Motion 3, Paper No. 26). Lastly, Zhou has requested that Zhou claims 14-17 and 28 be designated as not corresponding to Count 1. (Zhou Preliminary Motion 4, Paper No. 27).

A party filing a motion under 37 CFR § 1.633 has the burden of proof to show that it is entitled to the relief sought in the motion. 37 CFR § 1.637(a). As discussed in detail below, with the exception of Zhou Preliminary Motion 4 to undesignate claims, all of the preliminary motions filed in this interference are denied as the respective moving parties have failed to meet their burden of proof.

B. Zhou Preliminary Motion 1 Fails to Demonstrate that Keagy's Corresponding Claims are Anticipated or Rendered Obvious by the Prior Art

Zhou Preliminary Motion 1 requests judgment that Keagy's corresponding claims be held unpatentable as either being anticipated under 35 U.S.C. § 102 or rendered unpatentable under 35 U.S.C. § 103, in view of the prior art. (Zhou Preliminary Motion 1, Paper No. 24, p. 1). In particular, Zhou argues that Chen et al., U.S. Patent No. 5,448,649 ("Chen '649") anticipates Keagy's corresponding claims. Additionally, Zhou argues that Keagy's corresponding claims are obvious over Sibbald, U.S. Patent No. 5,619,586 ("Sibbald '586") in view of Cobb, Jr., U.S. Patent No. 4,906,070 ("Cobb '070") as well as Elmes et al., U.S. Patent No. 4,455,083 ("Elmes '083") and Usui et al., U.S. Patent No. 5,210,796 ("Usui '796"). These grounds of rejection are discussed below.

1. Chen '649 Is Not "Prior Art" to Keagy's Corresponding Claims

As noted by Zhou, Keagy's involved '744 application was filed as a continuation of its earlier '418 application, which itself is a continuation of Keagy's earlier '098 application filed on September 16, 1994. (Paper No. 24, p. 2, ¶¶ 1-2). Chen '649 issued from an application filed on May 24, 1994. (ZX 2008, front page). Accordingly, on its face, Chen '649 is available as prior art under 35 U.S.C. § 102(e).

During the prosecution of Keagy's '098 application, the examiner rejected some of Keagy's pending claims as obvious over Chen '649. (ZX 2004, Office Action of 11/29/95, p. 9). In response to the rejection over Chen, Keagy filed several declarations under 37 CFR § 1.131 in an effort to overcome the Chen reference. According to Zhou, however, these declarations are

insufficient to establish an actual reduction to practice for the fingerprint system of Count 1. (Paper No. 24, pages 14-17).

In opposing Zhou's Preliminary Motion 1, Keagy filed three new declarations. (KX 1006, 1007 and 1008). Keagy alleges that these three declarations establish that Naum Pinkhasik, a joint inventor, and Yury Shapiro, a co-employee of Pinkhasik, tested an embodiment of a fingerprint sensing system in the United States in December 1993 and/or January 1994 that met every limitation of Count 1. (Keagy Opposition 1, Paper No. 34, p. 2, ¶ 11).

Prior to discussing the relative merits of Keagy's new declarations, we note that Zhou has taken the position that the "supplemental" declarations "cannot be used to cure its [Keagy's] earlier issued '148 patent and are therefore irrelevant to a determination of the adequacy of Keagy's original Rule 131 submissions." (Zhou Reply 1, Paper No. 40, p. 3). Keagy, however, is not attempting to "cure" an alleged inadequacy in the prosecution of its earlier issued '148 patent. Rather, Keagy is present in this interference based on the claims of its involved '744 application. Zhou has not cited any precedent that, absent inequitable conduct, prevents an applicant from submitting new material evidence in a continuation application. Moreover, we are not aware of any such precedent. *See*, e.g., *Applied Materials v. Advanced Semi. Materials*, 98 F.3d 1563, 40 USPQ2d 1481, (Fed. Cir. 1996)(After an appeal was lost at the CCPA, new and material evidence was submitted in to the PTO. This evidence was properly considered by PTO.).

An inventor faced with a rejection under 35 U.S.C. § 102 or § 103 based upon a reference which is prior art under 35 U.S.C. § 102(a) or (e), and which does not claim the same patentable

invention, may file a declaration that demonstrates an actual reduction to practice in this country for the claimed invention that is prior to the effective date of the reference. 37 C.F.R. § 1.131 (2000).[3] Accordingly, we review Keagy's declarations to determine whether they comply with the standards set forth in Rule 131.

The three declarations submitted by Keagy are from Oscar R. Pieper, Yury Shapiro and Naum Pinkhasik. (KX 1006-1008). Mr. Pinkhasik is a named inventor for the Keagy '744 application whereas Mr. Pieper and Mr. Shapiro are not. The three declarations tell a consistent story. That is, Mr. Pinkhasik and Yury Shapiro entered the United States with a working prototype of a removable microprism platen for an electronic fingerprint reader in late December 1993. (KX 1007, ¶¶ 4-5 and KX 1008, ¶¶ 3-4). This removable platen was then tested at IT

---

[3]The pertinent portions of 37 C.F.R. § 1.131 read as follows:

> (a) When any claim of an application . . . the inventor of the subject matter of the rejected claim. . . may submit an appropriate oath or declaration to establish invention of the subject matter of the rejected claim prior to the effective date of the reference or activity on which the rejection is based. The effective date of a U.S. patent . . is the earlier of its publication date or date that it is effective as a reference under 35 U.S.C. 102(e). . . . Prior invention may not be established under this section if either:
>
> > (1) The rejection is based upon a U.S. patent or U.S. patent application publication of a pending or patented application to another or others which claims the same patentable invention as defined in § 1.601(n); or
> >
> > (2) The rejection is based upon a statutory bar.
>
> (b) The showing of facts shall be such, in character and weight, as to establish reduction to practice prior to the effective date of the reference, or conception of the invention prior to the effective date of the reference coupled with due diligence from prior to said date to a subsequent reduction to practice or to the filing of the application.. . .

Concepts in Mountain View, California in late December 1993 or early January 1994. (KX 1007, ¶ 6 and KX 1008, ¶ 4). This removable platen prototype was then shown to Mr. Pieper and successfully tested for him before the end of January 1994. (KX 1008, ¶ 4 and KX 1006, ¶ 7). All three declarations state that the prototype device successfully tested in December 1993 or January 1994 is described by Keagy claim 1, whose language is identical to Count 1. (KX 1006, ¶ 9, KX 1007, ¶ 9, and KX 1008, ¶ 8).

The three declarations submitted by Keagy describe the testing of a microprism platen for an electronic fingerprint system. The description of the device that is mentioned in the three declarations is consistent with the description contained as an attachment to a letter from Mr. Keagy to Harold Jackson, Esq. that bears a date of January 31, 1994. (KX 1005). Specifically, the letter indicates that an updated disclosure of the fingerprint platen and fingerprint card reader was being provided to Mr. Jackson. The disclosure describes a platen that employs an optical surface to separate beams used in imaging the fingerprint. Suitable optical surfaces are said to include "small prisms in parallel rows." (KX 1005, Exhibit B, p. 3 of 6).

Keagy has filed sufficient and convincing evidence that a reduction to practice occurred in this country for Keagy's claimed invention. This reduction to practice was prior to the effective date of the Chen reference. Accordingly, Chen is not available as a prior art reference to Keagy's claims.

Additionally we note that Chen teaches that its microprisms are "elastic" as compared to the "rigid" prismlets recited in Keagy claim 1, Zhou claim 1 and Count 1. Indeed, Chen specifically states that the microprisms become deformed when impressed by a finger. (ZX

2008, col. 2, lines 30-38). This teaching of Chen was cited by Zhou during the prosecution of its '858 patent. (KX 1012, p. 3). Zhou even stated that "[i]t would not be obvious to modify Chen to use rigid prismlets, as claimed in the present invention, since the elasticity of the prismlets is inherent to Chen." (KX 1012, p. 3).[4]

2. Sibbald '586 and Cobb '083 Do Not Render Keagy's Corresponding Claims Obvious

Zhou alleges that all of Keagy's involved claims are unpatentable under 35 U.S.C. § 103 over Sibbald in view of Cobb. (Zhou Preliminary Motion 1, Paper No. 24, p. 18). Sibbald is cited by Zhou as teaching a method and apparatus for producing a fingerprint image. Moreover, Zhou cites Sibbald as employing an apparatus having a plurality of prismlets and where light is reflected from a first major surface to a second major surface by total internal reflection. (Paper No. 24, p. 18). According to Zhou, the only limitation of Keagy claim 1 that is not taught or disclosed in Sibbald is the reflection of light being emitted from exit surfaces of the prism sheet to create a fingerprint image. (Paper No. 24, p. 19). Cobb is cited by Zhou as teaching the use of a totally internally reflecting, thin film having prismlets. Zhou states that:

> It would have been a relatively simple and straightforward task to modify Sibbald's fingerprint reading device by replacing his prism strip with the prism sheet taught by Cobb, Jr. to arrive at the invention of Count 1. A person of

---

[4]Zhou has stated that if the Board determines that Keagy's claims are unpatentable over the Chen reference, it would accept a similar ruling that Zhou claims 1-10 and 18-27 of the '858 patent would also be unpatentable. While Keagy has demontrated that it reduced its claimed invention prior to the effective date of the Chen reference, Zhou has not. Accordingly, Chen would be prior art to Zhou. Yet, as it is not entirely clear on this record that Chen teaches or suggests the use of "rigid" prisimlets, we do not hold Zhou claims to be unpatentable over the Chen reference.

> ordinary skill would have been motivated to make such a modification since doing so would produce a thinner, more compact device as suggested by Sibbald.

(Paper No. 24, p. 20).

It is well settled that "a *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)). Any incentive, reason or motivation to modify the prior art references must flow from some teaching in the art that suggests the desirability of making the modification needed to arrive at the claimed invention. *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed Cir. 1995); *In re Gorman*, 933 F.2d 982, 986-87, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). ("When it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether there is any suggestion or motivation in the prior art to make the selection made by the applicant. [Citations omitted] . . . The extent to which such suggestion must be explicit in, or may be fairly inferred from, the references, is decided on the facts of each case, in light of the prior art and its relationship to the applicant's invention.").

As the moving party, Zhou has the burden of proof to show that it is entitled to the relief sought in the motion. 37 CFR § 1.637(a). On the facts presented, Zhou has failed to demonstrate that Sibbald suggests replacing its prism strip **44** with the prism sheet taught by Cobb. At best, Sibbald teaches that the use of a Fresnel prism strip **44** allows for a more compact device than an embodiment that employed a single prism **24**. (See, e.g., ZX 2012, Figures 2 and 3 and col. 5, lines 1-5). Thus, Sibbald already teaches the use of the prism strip and the replacement of

Sibbald's prism strip with Cobb's prism sheet would not further reduce the size of Sibbald's "more compact device." Moreover, as apparent from Figure 3 of Sibbald, even with a prism strip **44**, Sibbald does not describe or suggest a device where reflected light is emitted from a plurality of exit surfaces. Accordingly, Sibbald does not motivate one skilled in the art to replace Sibbald's prism strip 44 with the prism sheet of Cobb to arrive at the Keagy's claimed device where reflected light is emitted from a plurality of exit surfaces.

Additionally, Zhou has cited several references as supporting an obviousness determination for certain Keagy's dependent claims. For example, Zhou has cited the teachings of Usui '797 and Elmes '083, Igaki (ZX 2011) and the 3M™ Brightness Enhancement Film (BEF) II product description (KX 1003). As applied by Zhou, these references do not make up for the deficiencies of the Sibbald and Cobb references. Specifically, the additional references do not teach, disclose or suggest the replacement of Sibbald's prism strip with a prism sheet to further reduce the size of Sibbald's "more compact device."

Zhou has failed to demonstrate that Keagy's corresponding claims are anticipated or rendered obvious by the prior art. Accordingly, Zhou Preliminary Motion 1 is ***denied***.

C. Zhou Preliminary Motion 2 Fails to Show that Keagy's Corresponding Claims Lack Sufficient Description and/or are Indefinite

Zhou Preliminary Motion 2 requests judgment that Keagy's corresponding claims be found unpatentable for lack of written description under 35 U.S.C. § 112, 1st paragraph and unpatentable for lack of definiteness under 35 U.S.C. § 112, 2nd paragraph. (Zhou Preliminary Motion 2, Paper No. 25, p. 1). Generally, it is Zhou's position that one of ordinary skill in the

art: 1) would not have believed that Keagy possessed the invention set forth in Keagy's corresponding claims; and 2) that one of ordinary skill in the art would have failed to understand the meaning of Keagy's claims given Keagy's alleged "inconsistent" statements regarding "reflection" and "refraction."

1. Keagy's Corresponding Claims are Definite

Zhou argues that the Keagy '744 disclosure uses the terms "reflect," "reflection," "refract," and "refraction," interchangeably and in a contradictory manner. According to Zhou, an "ordinary person" reading the Keagy '744 specification would be "utterly confused" and would not understand the type of optical phenomenon that is being described. (Paper No. 25, p. 14). Based on these alleged contradictory teachings and inconsistent use of terminology, Zhou states that one skilled in the art would not understand what is claimed.

The proper standard for determining definiteness under 35 U.S.C. § 112, second paragraph, is whether a claim reasonably apprises those of skill in the art of its scope. See *In re Warmerdam*, 33 F.3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994); *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200, 1217, 18 USPQ2d 1016, 1030 (Fed. Cir. 1991). In order to determine whether a claim reasonably apprises those skilled in the art of its scope, we must first construe the meaning of the claims.

There is a heavy presumption in favor of the ordinary meaning of the language of a claim. The Federal Circuit has identified at least two situations where a sufficient reason may exist to constrict the ordinary and accustomed meaning of a claim term. First, where a patentee or

applicant has chosen to be his or her own lexicographer by setting forth a clear definition of a claim term. Secondly, where the terms of the claim so deprive the claim of clarity that there is no means by which the scope of the claim may be ascertained from the language used. *Johnson Worldwide Assoc., Inc. v. Zebco Corp*, 175 F.3d 985, 989, 50 USPQ2d 1607, 1610 (Fed. Cir. 1999).

Zhou takes issue with the use of the terminology "reflected through total internal reflection" as it appears in Keagy claim 1 due to the alleged inconsistent use of the terminology in Keagy's specification. Zhou, however, recognizes that the phrase "reflected through total internal reflection" has a meaning that is "well understood by ordinary practitioners in the field of optical sensing systems." (Paper No. 25, p. 6). As such, we look to Keagy's '744 written description and prosecution history to determine whether Keagy has chosen to be his own lexicographer and deliberately and clearly define this phrase in a manner that is contrary to its ordinary meaning. *Renishaw PLC v. Marposs Societa' Per Azioni*, 158 F.3d 1243, 1249, 48 USPQ2d 1117, 1121 (Fed. Cir. 1998).

Zhou directs our attention to certain portions of the '744 specification as evidence that Keagy has used the term "reflection" and "refraction" in a "contradictory manner that divorces these terms from their ordinary definitions." (Paper No. 25, p. 13). In particular, Zhou cites Keagy's statement that the rays **31**, **33** and **35** of Fig. 3 are "totally internally refracted." Furthermore, Zhou quotes Keagy's statement that rays **52** and **53** of Fig. 6 are "totally internally reflected" whereas rays **52'** and **53'** are said to be "refracted." (Paper No. 25, p. 13).

In response to Zhou's contentions, Keagy notes that Zhou's witness, Professor Neifeld has testified that the phrase "reflected through internal reflection" is a fundamental principle in the optical sciences and has a meaning that is well understood by ordinary practitioners. (Paper No. 35, p. 23). Moreover, Keagy argues that the specification contains only two passages where the term "refracted" was used in place of "reflected" and that these two instances are "clear typographical errors." (Paper No. 35, p. 24).

Both parties agree that one skilled in the art would understand the principle of reflected versus refracted light. Moreover, the prior art of record in this interference amply demonstrates how light is bounced off of a surface using total internal reflection. (See, ZX 2012, Sibbald '586, Figures 2, 3 and 5 and ZX 2008, Chen '694, Figure 7A and 7B). Keagy's depiction and description of Figures 2, 5, 7A and 7B are consistent with the total internal reflection terminology used in Keagy's claims. Accordingly, Zhou has failed to demonstrate that Keagy has unmistakably and deliberately defined the phrase "reflected through total internal reflection" in a manner that is contrary to its ordinary meaning.

2. Zhou has Failed to Prove that Keagy's Corresponding Claims Lack Adequate Written Description

Zhou argues that Keagy's corresponding claims lack a sufficient written description under 35 U.S.C. § 112, 1st paragraph. Specifically, Zhou contends that one skilled in the art reading Keagy's claims, specification and the prosecution of Keagy's '098 grandparent application would conclude that Keagy did not describe a system in which a portion of the illumination incident at

the sensing surface is "reflected through total internal reflection" to create an image of a fingerprint. (Paper No. 25, p. 5).

While the specifics of the cases concerning adequate written description vary, the cases agree that the inquiry is *factual* and must be assessed on a *case-by-case* basis. Moreover, because of the fact-sensitive nature of the written description inquiry, the Federal Circuit has advised against misapplication of precedent in this area. *See, Union Oil Co. of California v. Atlantic Richfield Co.*, 208 F.3d 989, 1000, 54 USPQ2d 1227, 1235 (Fed. Cir. 2000); *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1562, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991); and *In re Driscoll*, 562 F.2d 1245, 1250, 195 USPQ 434, 438 (CCPA 1977).

The purpose of the written description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by the inventor. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d at 1563, 19 USPQ2d at 1116. The inventor can demonstrate possession by such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention. The inventor, however, needs to show that the inventor was "in possession" of the invention by describing the invention, with all its claimed limitations, not that which makes it obvious. Thus, entitlement to a filing date does not extend to subject matter which is not disclosed, but would have been obvious over what is expressly disclosed. It extends only to that which is disclosed. A description which renders obvious the invention for which an earlier filing date is sought is not sufficient. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1571-72, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997).

In reviewing Keagy's written description we are reminded that compliance with

35 U.S.C. § 112, first paragraph is as of the filing date of the application relied on. *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 54 USPQ2d 1915 (Fed. Cir. 2000) (If claims to subject matter in later-filed application are not supported by ancestor application in terms of 35 U.S.C. § 112, first paragraph, they are simply denied benefit of earlier filing date, not invalidated. Thus, for purposes § 112, first paragraph, earlier specifications are relevant only when the benefit of an earlier filing date is sought under 35 U.S.C. § 120.); *Vas-Cath Inc. v. Mahurkar*, 935 F.2d at 1563, 19 USPQ2d at 1116.

a. Keagy's Corresponding Claims are Supported by Keagy's Specification

Keagy's corresponding claims are originally filed claims in the involved Keagy '858 application. *See Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 938, 15 USPQ2d 1321, 1326 (Fed. Cir. 1990) ("The original claims as filed are part of the patent specification."). Similarly, Keagy Figures 2, 3, 5, 6, 7A and 7B are originally filed drawings, each of which depicts one or more totally internally reflected light rays. These depictions and the claim language are consistent with the teachings of the prior art. Moreover, these depictions and the claim language are consistent with the "well understood" meaning of the phrase "reflected through total internal reflection."

Keagy's specification identifies the 3a and 4a rays of Figure 5 and the rays that bounce off the surface **26** in 7A and 7B. Yet, Keagy's description of rays that bounce off the upper surface of the platen in Figures 3 (**31**, **33** and **35**) and 6 (**52'** and **53'**) is inconsistent with the description of similar rays in Figures 5 (**3a** and **4a**) and 7A and 7B. Thus, Keagy's specification

contains two instances where the term "refracted" is used to describe light rays that one skilled in the art would understand to be "reflected" light rays. While it is not apparent that the two instances where the term "refracted" is misused are "typographical" errors, it is apparent from the record that one skilled in the art would understand that the term "refracted" in these two instances was erroneous and that the rays were "reflected." Specifically, one skilled in the art would appreciate that rays **31**, **33** and **35** in Figure 3 and rays **52'** and **53'** in Figure 6 are totally internally reflected. (KX 1007, Declaration of Yury Shapiro, ¶¶ 12, 13, 15 and 16).

Zhou has argued that Keagy describes the operation of Keagy Figure 10 in terms of refraction. As testified by Yury Shapiro, Keagy Figure 10 depicts an embodiment that involves the formation of a negative image, i.e., white ridges and dark valleys for the fingerprint. In contrast, Figures 3, 7A and 7B are directed to "positive" images, i.e., dark ridges and white valleys, that are discussed in terms of "reflection." (KX 1007, Declaration of Yury Shapiro, ¶ 17). As such, Figure 10 and Keagy's description of that depiction are consistent.

To the extent the testimony of Professor Neifeld differs from that of Yury Shapiro on the issue of written description, we credit the testimony of Yury Shapiro. More particularly, based on the facts as they have been presented to us, we give little weight to the testimony of Professor Mark A. Neifeld who concluded that Keagy's specification is so inadequate that one skilled in the art would not recognize that it describes the invention set forth in Keagy's corresponding claims. (ZX 2010, Zhou's First Declaration of Prof. Mark A. Neifeld, p. 13, ¶ 34). Keagy's '744 specification, including the drawings and claims, adequately describes the invention set forth in

Keagy's corresponding claims such that one skilled in the art would recognize that Keagy was in "possession" of what is now claimed.

b. The '098 Prosecution History Does Not Necessarily Limit Keagy's Written Description for Keagy's Corresponding Claims.

With respect to the '098 prosecution history, Zhou has cited *Desper Products Inc. v. QSound Labs Inc.*, 157 F.3d 1325, 48 USPQ2d 1088 (Fed. Cir. 1998) as standing for the proposition that:

> [I]t is firmly established law that when an applicant clearly distinguishes the claimed invention in one application from the teachings of the prior art in arguments made to the Patent Office, such arguments operate as an explicit surrender of certain subject matter, and the applicant's limiting remarks in that application cannot be avoided by filing a continuation application with different claims.

(Paper No. 41, p. 6).

It is apparent that Zhou has overstated the decision in *Desper*. *Desper* involved an appeal from a district court decision granting summary judgment of noninfringement in favor of *Desper*. The main issues on appeal involved claim construction and prosecution history estoppel. In construing the claims of two QSound's patents ('462 and a divisional '860), the Federal Circuit noted that ***identical claim language*** had been used and relied upon by QSound during the prosecution of a divisional application. *Id.* at 1330-31, 48 USPQ2d at 1091-92. Moreover, with respect to estoppel under the doctrine of equivalents, the Federal Circuit stated that the estoppel applied with equal force to the ***identical claim language*** appearing in the divisional '860 patent. *Id.* at 1339 n.6, 48 USPQ2d at 1099 n.6. Zhou's citation to *SciMed Life Systems Inc. v.*

Advanced Cardiovascular Systems, Inc., 242 F.3d 1337, 58 USPQ2d 1059 (Fed. Cir. 2001) is also unavailing as it involves claim construction where "all embodiments" were said to have a particular structure. It is not apparent from *Desper* or *SciMed* that an applicant cannot seek a broader claim in a continuation application or that an applicant cannot file a continuation application that seeks to claim a different embodiment of the invention.

As to the comments made during the prosecution of Keagy's '098 application, Zhou, as the moving party, has the burden of proof to show that it is entitled to the relief sought. As part of this burden, Zhou needs to demonstrate that the comments made during the prosecution of Keagy's '098 grandparent application limit the manner in which the written description can be construed for the embodiment presently claimed by Keagy. Thus, Zhou needs to demonstrate that the "refracted" embodiment claimed in Keagy's '098 application is the same embodiment presently claimed and/or that the same claim language is employed. The mere fact that Keagy's '098 prosecution history involved amending the then pending claims to state "refracted" rather then "reflected" is not sufficient evidence that Keagy's presently claimed embodiment excludes light reflected by total internal reflection.

An applicant may file an application describing more than one embodiment. For example, an applicant may describe two separate and distinct embodiments and present claims to these distinct embodiments. That an applicant can choose to employ different claim scope for two distinct embodiments is a well established practice. In such a situation, the prosecution history of one embodiment may or may not affect the claim scope of the second, distinct embodiment. On the facts presented, Zhou has not demonstrated that the comments made in

furtherance of the '098 claims are limiting for the claims now sought. Moreover, even if Zhou were correct that the comments in the '098 application were erroneous in describing the reflected light as refracted, it would appear that the claims of the '098 application would lack written description rather than the presently claimed invention.

Zhou Preliminary Motion 2 seeking judgment that Keagy's corresponding claims lack sufficient written description and/or are indefinite is ***denied***.

D. Zhou Preliminary Motion 3 to Deny Priority Benefit of Earlier Keagy Applications

Zhou Preliminary Motion 3 requests judgment that Keagy be denied priority benefit of Keagy's earlier filed '418 and '098 applications. (Zhou Preliminary Motion 3, Paper No. 26, p. 1). Generally, Zhou alleges that the '418 and '098 applications fail to constitute a constructive reduction to practice of the count. (Paper No. 26, p. 4).[5]

For Keagy to have benefit of its earlier filing dates, Keagy's earlier applications must constitute a constructive reduction to practice of the subject matter of the count. *Credle v. Bond*, 25 F.3d 1566, 1570, 30 USPQ2d 1911, 1914 (Fed. Cir. 1994). For an earlier-filed application to serve as constructive reduction to practice, "the applicant must describe the subject matter of the count in terms that establish that he was in possession of the later-claimed invention, including all of the elements and limitations presented in the count, at the time of the earlier filing." *Hyatt v. Boone*, 146 F.3d 1348, 1353-54, 47 USPQ2d 1128, 1131 (Fed. Cir. 1998). Moreover, "it is

[5]Zhou Preliminary Motion 3 also requests that Keagy's corresponding claims be held indefinite. (Paper No. 26, pages 12-15). Zhou's arguments regarding indefiniteness have been addressed with respect to Zhou Preliminary Motion 2.

insufficient as written description, for purposes of establishing priority of invention, to provide a specification that does not unambiguously describe all limitations of the count." *Id.*

Zhou's arguments in support of Zhou Preliminary Motion 3 and Keagy's opposition are predominantly the same as those presented above with respect to Zhou Preliminary Motion 2, which requests judgment that Keagy's corresponding claims lack written description and/or are indefinite. Based on the facts presented to us we have determined that Keagy's corresponding claims are supported by Keagy's '744 specification. In particular, Keagy claim 1 is identical to Count 1 and is supported by the '744 specification. As recognized by Zhou, "the disclosure of the '744 application is identical to that of the '418 parent application, and also to that of the '098 grandparent application." (Paper No. 26, p. 2, ¶ 2). Zhou has not sufficiently explained why we should determine that Keagy describes all the elements and limitation of Count 1 in the involved '744 application but not in the "identical" '418 and '098 disclosures. As the '744 specification contains an "identical" disclosure to that of the '418 application and the '098 application, it appears that the '418 application and '098 application also support Keagy claim 1, which is identical to Count 1.

Zhou, as the moving party, bears the burden of proof with respect to Zhou Preliminary Motion 3. Zhou has failed to meet this burden. Zhou Preliminary Motion 3 is ***denied***.

E. Zhou Preliminary Motion 4 to Designate Zhou Claims 14-17 and 28 as Not Corresponding to Count 1

Zhou Preliminary Motion 4 requests that the interfering subject matter be redefined by designating Zhou claims 14-17 and 28 as not corresponding to Count 1. (Zhou Preliminary

Motion 4, Paper No. 27, p. 1). According to Zhou, Zhou claims 14-27 and 28 define a separate patentable invention from Zhou claims 1-10 and 18-27.

Under 37 CFR § 1.633(c)(4) a party may submit a motion requesting that an application or patent claim be designated as ***not*** corresponding to a count. In filing such a motion, the moving party shall show that the claim(s) to be designated as corresponding to the count ***does not*** define the same patentable subject matter as another claim whose designation as corresponding to the count is not disputed by the moving party. 37 CFR § 1.637(c)(4)(ii). The moving party for such a motion bears the burden of proof. 37 CFR § 1.637(a).

Zhou argues that Zhou claim 10 is the closest claim to Zhou claims 14-17 and 28. (Paper No. 27, p. 5). Zhou claims 10 and 14 are said to differ in scope as Zhou claim 10 fail to recite:

1) A detector array having a width that is smaller than the width of the sheet prism;
2) A lens that de-magnifies the image to be captured; and
3) An optical system with mirrors to fold the emitted radiation in such a way as to alter the ratio between the maximum length and width of the sensing system.

(Paper No. 27, p. 6). According to Zhou, claim 14 defines a separate patentable invention from Zhou claim 10. Moreover, as Zhou claims 15-17 depend from Zhou claim 14 and as Zhou claim 28 generally includes all the features recited in Zhou claims 14-17, Zhou claims 15-17 and 28 are also alleged to define a separate patentable invention over Zhou claim 10.

Zhou acknowledges that the prior art discloses optical sensing systems that employ detector arrays and a lens for capturing an image. Zhou also acknowledges that the use of mirrors to fold light radiation was known at the time of Zhou's invention. Yet, Zhou contends that the prior art does not teach, disclose or suggest a fingerprint sensing system of claim 10 with

mirrors to fold the emitted radiation so as to change the ratio between the maximum length and maximum width of the system. (Paper No. 27, p. 6).

Keagy argues that Ranalli '448 teaches a device that has the folding of light by mirrors. According to Keagy, the mirrors of Ranalli allow for a fingerprint system with a shorter length such that the subject matter of Zhou claim 14 is obvious in view of the subject matter of Zhou claim 10. (Keagy Opposition 4, Paper No. 37, pages 7-8). Specifically, Keagy alleges that Ranalli discloses and teaches:

> [A]n optical system with mirrors to fold emitted radiation so as to change the "ratio between the maximum length and maximum width of the sensing system" as taught in Zhou '858 and claimed in claim 14.

(Paper No. 37, pages 8-10). From this, Keagy concludes that it "would have been obvious to use mirrors to fold the radiation in the claim 10 subject matter ***if one wished*** to have a more compact device." (Paper No. 37, p. 10, emphasis added). Additionally, Keagy cites Chen '649 as teaching the use of a detector array having a smaller width than the width of the sheet prism and a demagnification of the image. (Paper No. 37, p. 6).

Obviousness must be based upon objective evidence of record and requires that particular findings be made as to why a skilled artisan, with no knowledge of the claimed invention, would have selected the specific components for combination in the manner claimed. Specifically, the Federal Circuit has stated that:

> "The factual inquiry whether to combine references must be thorough and searching." *Id.* [*McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001)] It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. *See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000) ("a

> showing of a suggestion, teaching, or motivation to combine the prior art references is an `essential component of an obviousness holding'") (quoting *C.R. Bard, Inc., v. M3 Systems, Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998)); *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617(Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) ("`teachings of references can be combined only if there is some suggestion or incentive to do so.'") (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)).

In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

Even accepting Keagy's interpretation of the teachings of the prior art, Keagy has failed to direct our attention to "some motivation, suggestion, or teaching" for making the specific combination of elements claimed by Zhou. At best, Keagy has demonstrated that ***if one desired*** to make Zhou's claimed invention more compact, one skilled in the art could use the mirrors of Ranalli to achieve that goal. Keagy, however, has failed to demonstrate that the prior art in combination with Zhou claim 10 guides one skilled in the art to make Zhou's device more "compact."

Zhou has argued that the prior art in combination with Zhou claim 10 fails to teach, disclose or suggest the claimed combination of elements recited in Zhou claims 14-17 and 28. On the facts presented, we agree with Zhou. As such, Zhou Preliminary Motion 4 is ***granted***. The Count and the parties' revised claim correspondence are set forth in Appendix A.

F. Keagy Preliminary Motion 1 to Designate Zhou Claims 11-13 as corresponding to Count 1

Keagy requests that the interfering subject matter be redefined by designating Zhou claims 11-13 as corresponding to Count 1. (Keagy Preliminary Motion 1, Paper No. 30, p. 1). Generally, Keagy argues that Zhou claims 11-13 define the same patentable subject matter as Zhou claims 1 and 10, which are designated as corresponding to Count 1. (Paper No. 30, p. 9). Zhou does not agree.

Under 37 CFR § 1.633(c)(3) a party may submit a motion requesting that an application or patent claim be designated as corresponding to a count. In filing such a motion, the moving party shall show that the claim(s) to be designated as corresponding to the count define the same patentable subject matter as another claim whose designation as corresponding to the count is not disputed by the moving party. 37 CFR § 1.637(c)(3)(ii). The moving party for such a motion bears the burden of proof. 37 CFR § 1.637(a).

Keagy states that Zhou claims 1 and 10 describe a fingerprint sensing system including a sheet prism having a sensing surface and a plurality of rigid prismlets on the bottom, each of which has an entrance surface and an exit surface. Keagy alleges that Zhou's fingerprint sensing system of claims 1 and 10 create an image with an aberration, i.e., distortion, owing to the angles at which the light rays forming the image pass through the exit surfaces with respect to the sensing surface and the resulting angles between the detector and the sensing surface. Citing Igaki, et al., *Applied Optics*, 1992 (KX 1002), Keagy alleges such aberrations were well known in the art. (Paper No. 30, p. 9).

Keagy argues that it was well known in the art that sheet prisms, such as brightness enhancement films ("BEF"), fold back larger angle light rays to smaller angle light rays with

respect to a normal axis. As such, Keagy alleges that it would have been obvious to one of ordinary skill in the art to reduce the aberration of Zhou by reducing the angle of the light rays coming from the exit surfaces. Keagy states that a second prism sheet could be used to reduce the angles. (Paper No. 30, pages 9-10).

Zhou disagrees with Keagy's analysis of the prior art and its teachings. At the outset, Zhou argues that none of the prior art references cited by Keagy disclose or suggest the use of two sheet prisms stacked substantially in parallel. Moreover, Zhou argues that Igaki teaches that a trapezoidal distortion problem may be corrected through the use of a "holographic fingerprint sensor." (See Igaki, KX 1002, p. 1794). As such, Zhou argues that one skilled in the art reading Igaki would be guided to a holographic fingerprint sensor rather than the claimed addition of a second-prism type device to bend light to a different location. (Zhou Opposition 1, Paper No. 33, pages 5-6).

Additionally, Zhou states that the brightness enhancement sheets (BEF) cited by Keagy were commonly used for enhancing the brightness in displays. Specifically, Zhou argues that the BEF sheets enhanced brightness by "converting a set of light rays occupying a large range of angles into a set that occupies a smaller set of angles." (Paper No. 33, p. 6).

In support of its Opposition, Zhou cites a declaration of Prof. Mark A Neifeld. Specifically, Professor Neifeld testified that:

> (6) Based on my experience in the optics field, it is my opinion that the invention of Zhou's claim 11 would not have been obvious to a person of ordinary skill at the time the invention was made, even if such a person were presented with the fingerprint system of either claims 1 or 10 of the '858 patent, taken in consideration with the references of Exhibits 1002-1004.

> (7) The reasons in support of my opinion include the fact that none of these references describe or even remotely suggest the use of first and second sheet prisms stacked substantially in parallel. To my knowledge, such a structure had not existed prior to the Zhou invention. Additionally, there is nothing in these references that would have motivated a skilled practitioner to modify the sensing system defined by Zhou's claim 1 or 10 to add a second sheet prism in parallel to the first prism. As I explained above, the conventional use of a BEF film at the time, and the use described in Exhibits 1003 and 1004, is to enhance brightness by taking a large range of angles and folding them into a smaller range. To add a second BEF sheet prism to the system of claims 1 or 10 would not have been obvious to a person of ordinary skill in the optical imaging field because the invention of claim 11 uses the BEF film for a purpose other than enhancing brightness; namely, to redirect a small angular cone of light in another direction. In my opinion, a skilled person working in the field at the time of the Zhou invention would have lacked motivation to use a BEF film in such an unconventional manner. To state it differently, at the time of the Zhou invention, in my opinion it would not have been obvious to a person of ordinary skill to take a device that was conventionally used to increase the efficiency of backlighting in displays and utilize it as a second sheet prism to correct for trapezoidal distortion.

(Zhou's Second Declaration of Prof. Mark A. Neifeld, ZX 2015, ¶¶ 6-7). Zhou concludes that the prior art at the time of Zhou's invention would not have suggested the addition of a second prism sheet, which was normally used for increasing the efficiency of backlighting in displays, and utilize it as a second sheet in the fingerprint sensing system of Zhou claim 10.

Keagy has demonstrated that the problem of trapezoidal distortion in fingerprint systems was well known in the art at the time of Zhou's invention. Yet, Keagy has not sufficiently demonstrated that one skilled in the art would have looked towards the use of a brightness enhancement film to correct such a problem. Specifically, on the facts presented, Keagy has failed to demonstrate that the prior art would have taught or suggested the addition of a second prism sheet stacked in substantial parallel with Zhou's prism sheet of Zhou claim 10. Lacking a

sufficient suggestion or motivation for the combination proposed, Keagy Preliminary Motion 1 is ***denied***.

G. Priority of Invention is Awarded Against Junior Party Zhou

Keagy has been accorded a benefit date of September 16, 1994 for purposes of priority. (Notice Declaring Interference, Paper No. 1, p. 4). Zhou has not alleged a date of conception prior to Keagy's earliest accorded priority benefit date. (Zhou's Transmittal of Preliminary Statement and Notice, Paper No. 23, p. 1). Accordingly, priority of invention is awarded against Junior Party Zhou.

IV. Order

As apparent from our discussion above, Zhou has not alleged a date of conception prior to Keagy's earliest accorded priority date. Thus, this decision on motions becomes a final decision.[6] Upon consideration of the record, and for the reasons given, it is:

ORDERED that Zhou Preliminary Motion 1 is ***denied***.

FURTHER ORDERED that Zhou Preliminary Motion 2 is ***denied***.

FURTHER ORDERED that Zhou Preliminary Motion 3 is ***denied***.

FURTHER ORDERED that Zhou Preliminary Motion 4 is ***granted***.

FURTHER ORDERED that Keagy Preliminary Motion 1 is ***denied***.

---

[6]Normally we would enter an Order to Show Cause as to why this interference should continue. At this juncture, however, the time for submitting additional evidence is past. As such, a response to an Order to Show Cause would in essence be a Request for Reconsideration.

FURTHER ORDERED that judgment on priority as to Count 1, the sole count in interference, is awarded against Junior Party Zhou.

FURTHER ORDERED that Junior Party Zhou is not entitled to a patent containing claims 1-10 and 18-27 of Zhou et al., U.S. Patent No. 5,796,858. 35 U.S.C. § 102(g).

FURTHER ORDERED that a copy of this final decision shall be placed and given a paper number in the file of Zhou et al., U.S. Patent No. 5,796,858 and Keagy et al., U.S. Application No.09/255,744.

FURTHER ORDERED that if there is a settlement agreement, attention is directed to 35 U.S.C. § 135(c) and 37 CFR § 1.661.

JAMESON LEE
Administrative Patent Judge

SALLY C. MEDLEY
Administrative Patent Judge

MICHAEL P. TIERNEY
Administrative Patent Judge

BOARD OF PATENT
APPEALS
AND
INTERFERENCES

cc (via Federal Express)

Counsel for Zhou:
(real party in interest, Digital Persona, Inc.)

Bradley J. Bereznak
BURGESS & BEREZNAK LLP
800 West El Camino Real
Suite 180
Mountain View, CA 94040

Tele.: (650) 903-2264
Fax: (650) 903-2280
E-Mail: BJBPATENT@AOL.COM (Bereznak)j

Counsel for Keagy et al.:

(real party in interest, Identix Incorp.)

William E. Booth
FISH & RICHARDSON P.C.
225 Franklin Street
Boston, MA 02110

Tel.: (617) 542-5070
Fax: (617) 542-8906
E-Mail: Booth@fr.com

William J. Egan, III
FISH & RICHARDSON P.C.
2200 Sand Hill Road
Suite 100
Menlo Park, CA 94025

Tel.: (650) 332-5070
Fax: (650) 854-0875

INTERFERENCE NO. 104,649
ZHOU V. KEAGY

APPENDIX A

Count 1.

Claim 1 of 5,796,858 [Zhou's U.S. Patent] .

The claims of the parties are as follows:

Zhou: 1-28
Keagy: 1-8, 13, 21 and 22

The claims of the parties which correspond to Count 1 are:

Zhou: 1-10 and 18-27
Keagy: 1-8, 13, 21 and 22

The claims of the parties which do not correspond to Count 1

Zhou: 11-17 and 28
Keagy: None